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SEAWEED RESOURCES OFF TAMIL NADU COAST: SECTOR III. VALINOKKAM – KILAKKARAI

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Abstract

Survey of seaweed resources in deep water was carried out in the area between Valinokkam and Kilakkarai during January 1989 and March,1990 respectively. In the survey from Valinokkam to Kilakkarai 33 species of marine algae were recorded of which 8 species belong to Chlorophyta, 8 to Phaeophyta and 17 to Rhodophyta. Only one species of seagrass *Halophila ovalis* was recorded. Among the 200 sq km area surveyed, vegetation occurred only in 27.5 sq.km with a total standing crop of 2962.5 tonnes (wet wt). The estimates for the dominant species are: *Spatoglossum asperum* - 1200 tonnes, *Halymenia floresia* - 2550 tonnes and *Hypnea spp.* 710 tonnes. The *Hypnea spp.* could be exploited for the production of carrageenan by the Indian seaweed industries.

Introduction

In India, seaweeds are used for the production of agar and sodium alginate. The resources of algin yielding seaweeds available in nearshore areas of the Indian coast are quite sufficient to meet the present raw material requirement of indigenous industries. But the availability of agar yielding sea weeds in shallow waters of the coastline is inadequate to meet the demand of agar industries. Hence locating the seaweed beds in deep waters became a necessity. Earlier a few attempts have been made on the qualitative survey of seaweeds occurring in deep waters off Tuticorin (Varma, 1960; Mahadevan & Nagappan Nayar, 1967). More recently, the Central Marine Fisheries Research Institute and Central Salt & Marine chemicals Research Institute have jointly undertaken the survey of deep water seaweed resources from Rameswaram to Kanyakumari in Tamil Nadu in order to locate and assess the standing crop of seaweeds from the subtidal region. The coast was divided into four sectors, viz; I sector, Kattapadu-Tiruchendur II Sector, Alantalai - Manapad and Vembar - Nallatanni Tivu, III Sector - Valinokkam Kilakkarai and Manapad - Kanyakumari and IV sector Kilakkarai Rameswaram. The data gathered in the I and II sectors are published elsewhere. The present paper deals with the data pertaining to the resources of the survey of III sector - Valinokkam -Kilakkarai and Manapad - Kanyakumari. While algal biomass could be recorded for the Valinokkam - Kilakkarai region, no algal or seagrass vegetation was found between Manapad and Kanyakumari.

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Methods

The area surveyed was 10 sq.km extending from Valinokkam to Kilakkarai and lies between latitudes 8° 58' - 9 ° 8' N and longitudes 78° 40' - 78° 49' E and Manapad - Kanyakumari between 8°4' - 8° 20' N and 77° 34' - 78° 2' E. Four transects at 5 km intervals were marked between Valinokkam and each constituting a sampling station (Fig. 1). The seaweed and seagrass samples were collected by 'SCUBA' diving from one square metre quadrat at every 500 m interval along each transect. In Valinokkam - Kilakkarai area the number of stations surveyed in the transects varied from 15 to 22 and the depth ranged from 7.5 to 21 m. The seaweed samples were sorted out, identified species-wise and the biomass (wet wt) of each species taken. All species were preserved in liquid as well as in herbarium.

The biomass of all quadrats on a transect were averaged and this was used to compute the biomass for 2.5 sq km area. The estimates of all the sampling stations are added to get the total standing crop and similarly the sampling area of stations added together to give the total area supporting the seaweed growth. The species - wise resource estimates and the area covered are also computed by the same method. Resources estimate for a species is given only when its sampling biomass was 5 gm (wet)/m^2 or more.

Results

The substratum consisted of sand, mud, rock pebbles and/or sand-mud mixture. The seaweeds generally occurred on the rocks and pebbles. In Valinokkam-Kilakkarai region, of the total area of 200 sq km, only 27.5 sq km supported vegetation. Among the 80 stations sampled in the 4 transects, vegetation was found only in 11 stations. In all 25 genera and 33 species of algae were recorded of which 7 genera and 8 species belong to Chlorophyta, 6 genera and 8 species to Phaeophyta and 12 genera and 17 species to Rhodophyta. The resource potential of species is given in Table 1. The total estimated standing crop was 6000 tonnes (wet wt). Only one species of seagrass Happophila avalis was recorded in the entire area survyed.

Table 1. Estimated standing crop of seaweeds off Valinokkam - Kilakkarai

S.No.	Species	Transect number and wet weight (tonnes)				Total standing crop (tonnes wet)
		1	2	3	4	
	Green Algae					
1.	Halimeda macroloba	25.0	137.5	187.5	—	350.0
2.	Anadyomene stellata	—	—	125.0	—	125.0
	Brown Algae					
3.	Dictyota dichotoma	—	187.5	—	—	187.5
4.	D. maxima	—	50.5	—	—	50.5
5.	Padina pavonica	12.5	—	25.0	—	37.5
6.	Spatoglossum asperum	1200.0	—	—	—	1200.0
7.	Sargassum ilicifolium	—	25.0	—	—	25.0

	RED ALGAE					
8.	Helminthocladia australis	—	237.5	—	—	237.5
9.	Scinaia bengalica	—	12.5	—	—	12.5
10.	Amphiroa fragiliassima	—	—	12.5	—	12.5
11.	Halymenia floresia	1400.0	1125.0	25.0	—	2550.0
12.	H. venusta	—	—	12.5	—	12.5
13.	Gracilaria textorii	—	12.5	—	—	12.5
14.	Sarconema filiforme	—	162.5	——	162.5	
15.	Solieria robusta	125.0	25.0	—	—	150.0
16.	Hypnea flagelliformis	—	412.5	—	—	412.5
17.	H. musciformis	—	75.0	—	—	75.0
18.	H. valentiae	—	—	225.0	—	225.0
19.	Laurencia ceylanica	25.0	100.0	—	—	125.0
	Total	2787.5	2562.5	612.5	—	2962.5

Discussion

During the present survey the seaweed vegetation was found on pebbles and rocky substrata, as observed during I sector survey from Kattapadu-Tiruchendur (Anon, 1989) and II sector survey from Alantalai to Manapad and Vember to Nallatanni Tivu (Anon, 1988). The present survey also reveals the presence of about thirty three algal species as against 20 spp in the shallow water region between Valinokkam and Kilakkarai. But the species composition of the algal flora in the deep water region is entirely different from that of shallow water except for a few common species. *Dictyota dichotoma, Sargassum ilicifolium, Amphiroa fragilissima* and *Hypnea musciformis* (Anon, 1978).

The productivity of seaweeds in the III sector which measured 20 tonnes/sq km was far below that in the II sector (95 tonnes/sq km.) However, it was more than in the I sector (14 tonnes/sq.km). The seaweed resources of III sector reveal sufficient bio-mass of *Hypnea spp* for possible commercial exploitation.

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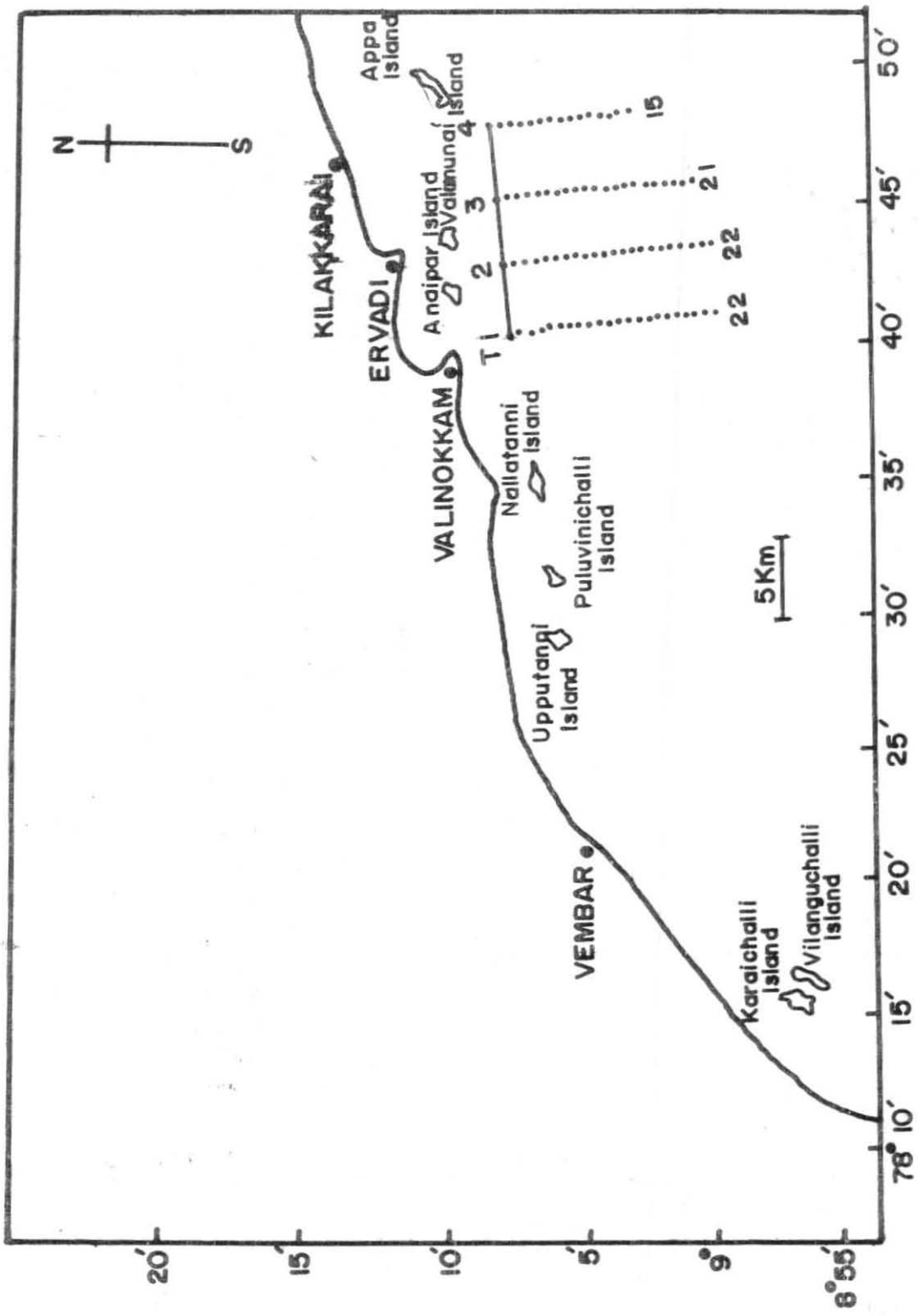

Fig. 1. Map showing the location of transects and stations surveyed between the area off Valinokkam-Kilakkarai.